LEADERSHIP COMPUTING FACILITY

# 2007 INCITE Call for Proposals for Allocations

## Oak Ridge National Laboratory's Leadership Computing Facility Systems Enabling High-Impact, Breakthrough Computational Science

### *Proposal Deadline: September 15, 2006*

*Cray XT3 Jaguar*

*Cray X1E Phoenix*

**Breakthrough Science Opportunities.** The U.S. Department of Energy's (DOE's) Office of Science has just released the 2007 Innovative and Novel Computational Impact on Theory and Experiment (INCITE) Call for Proposals (CFP). The Office of Science is seeking to support innovative, large-scale computational science projects requiring capability-class simulations (i.e., occupying a substantial portion of the system's resources at any given time) for achieving high-impact science. Successful proposals will be given the use of substantial computer time and data storage on some of the most powerful supercomputers in the world, including the leadership-class Cray supercomputers housed at the Oak Ridge National Laboratory (ORNL) in the National Center for Computational Sciences (NCCS). The INCITE program encourages proposals representing a broad range of science domains and coming from a wide range of institutions: DOE laboratories, universities, and other research institutions funded by DOE, other agencies, and industry. The Office of Science expects to make a small number of large awards (on the order of millions of processor hours per award) on the ORNL systems.

**Jaguar (Cray XT3).** At 50 TF of capability and 21 TB of memory, Jaguar is the most powerful computer system in DOE's Office of Science. The current Jaguar installation has 5,294 processor nodes. The compute partition offers 5,212 nodes, each composed of a 2.6-GHz AMD Dual-Core Opteron™ processor and 4 GB of memory, and the remainder of the nodes provide input/output and login services. Jaguar will be upgraded to more than 100 TF during 2007, allowing it to continue to be the most powerful leadership computer available for open science applications.

**Phoenix (Cray X1E).** Phoenix is the most powerful vector-processing system in the United States, and at 18.5 TF, it is one of the two largest Cray X1E systems in the world. The Cray X1E uses custom-designed vector processors to get high performance for scientific codes. It has 1,024 multistreaming vector processors (MSPs), each with a peak computation rate of 18 GF. Four MSPs form a node with 8 GB of shared memory. Memory bandwidth is very high, roughly half the cache bandwidth. The interconnect functions as an extension of the memory system, offering each node direct access to memory on other nodes at high bandwidth and low latency.

**CFP Logistics.** The CFP will close on September 15, 2006, with allocation award decisions expected to be made by the end of November. Allocation award winners are expected to have access to the ORNL NCCS systems beginning in January 2007. No other call for new proposals for use of ORNL's high-performance computing resources will be issued for 2007. The announcement can be found at http://www.energy.gov/news/3867.htm, and the CFP itself may be accessed at http://hpc.science.doe.gov/.

For help with the application process, representatives of the NCCS can be contacted at help@nccs.gov for assistance.

OAK RIDGE National Laboratory



ORNL 2005-G01161/aas_Aug.